

APPLICATION FOR
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SPECIFICATION

INVENTOR(S) : Yasuyuki KITADA

Title of the Invention: ELECTRONIC APPLIANCE AND ITS SHOOTING
METHOD

ELECTRONIC APPLIANCE AND ITS SHOOTING METHOD

Background of the Invention

Field of the Invention

5 The present invention relates to a portable electronic appliance comprising two shooting devices, and more particularly, to a technology for flashlights used along with the two shooting devices comprised by the portable electronic appliance.

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Description of the Related Art

 In recent years, some portable electronic appliances such as cellular phones, PDAs (Personal Digital Assistance), etc. have comprised a capability
15 for shooting an image, for processing the shot image, and for transmitting the shot image via a communication. Portable electronic appliances having this shooting capability sometimes have a twin camera configuration where two shooting devices are comprised and switched
20 to be used.

[patent document 1]

 Japanese Patent Publication No. HEI10-155141
"Information Terminal Device"

 This patent document discloses a configuration
25 where a second camera is optionally mounted in addition

to a standardly equipped camera head, images viewed on the two cameras are switched or synthesized and shot. [patent document 2]

Japanese Patent Publication No. 2002-176478
5 "Electronic Appliance Having a Shooting Capability"

This patent document discloses a configuration that comprises two cameras such as a front camera and a back camera, enables a face image of a user and a peripheral scenic image to be shot respectively with
10 the front camera and the back camera, and can transmit and display either or both of these images.

For a portable electronic appliance having such a twin camera configuration, a flashlight for shooting an image with the cameras is not considered at all
15 although various types of configuration for switching between two cameras are considered and described.

Summary of the Invention

To solve the above described problem, an
20 electronic appliance according to the present invention comprises a first image capture unit, a second image capture unit, an image capture selecting unit, a first light, a second light, a light selecting unit, and a shooting controlling unit. This electronic appliance
25 is, for example, a cellular phone, a PHS, a PDA, etc.

The first image capture unit shoots an image.

The second image capture unit is provided on a side different from the first image capture unit, and shoots an image.

5 The first light illuminates a shooting target when shooting is made with the first image capture unit.

The second light illuminates a shooting target when shooting is made with the second image capture unit.

The image capture selecting unit selects at least
10 either of the first image capture unit and the second image capture unit.

The light selecting unit selects at least either of the first light and the second light based on a selection made by the image capture selecting unit.

15 The shooting controlling unit takes a shot by using at least either of the first image capture unit and the second image capture unit, which is selected by the image capture selecting unit, and at least either of the first light and the second light, which is
20 selected by the light selecting unit.

The light selecting unit, for example, selects the first light when the image capture selecting unit selects only the first image capture unit, selects the second light when the image capture selecting unit
25 selects only the second image capture unit, and selects

both of the first light and the second light when the image capture selecting unit selects both of the first image capture unit and the second image capture unit.

The shooting controlling unit may be configured
5 to switch between a mode where at least either of the first light and the second light, which is selected by the light selecting unit, is lit in synchronization with shooting made with the first image capture unit or the second image capture unit, which is selected by the image
10 capture selecting unit, and a mode where at least either of the first light and the second light is lit from a time point prior to a time point when the shooting is made, based on a user instruction.

Furthermore, the present invention also covers a
15 shooting method executed by the electronic appliance within its scope.

According to the present invention, the light selecting unit selects at least either of the first light and the second light based on the selection made by the
20 image capture selecting unit, and switching is automatically made to the first light or the second light when the first image capture unit or the second image capture unit is switched.

25 **Brief Description of the Drawings**

Figs. 1A and 1B are an external view of a cellular phone having a twin camera configuration according to a preferred embodiment;

Fig. 2 is a block diagram showing a rough configuration of a portion which governs a shooting capability in an internal configuration of the cellular phone according to the preferred embodiment;

Fig. 3 is a flowchart showing a first operation process example of the cellular phone when shooting is made with a camera on an opposite shooting side;

Fig. 4 is a flowchart showing a second operation process example of the cellular phone when shooting is made with the camera on the opposite shooting side;

Fig. 5 is a flowchart showing a first operation process example of the cellular phone when shooting is made with a camera on a user shooting side;

Fig. 6 is a flowchart showing a second operation process example of the cellular phone when shooting is made with the camera on the user shooting side;

Fig. 7 is a flowchart showing a first operation process example when shooting is made with the camera on the user shooting side after shooting is made with the camera on the opposite shooting side;

Fig. 8 is a flowchart showing a second operation process example when shooting is made with the camera

on the user shooting side after shooting is made with the camera on the opposite shooting side;

Fig. 9 is a flowchart showing a first operation process example when shooting is simultaneously made with the camera on the opposite shooting side and the camera on the user shooting side; and

Fig. 10 is a flowchart showing a second operation process example when shooting is simultaneously made with the camera on the opposite shooting side and the camera on the user shooting side.

Description of the Preferred Embodiment

A preferred embodiment according to the present invention is described below with reference to the drawings.

In the following example, a cellular phone is taken as an example of a portable electronic appliance to which the present invention is applied. However, the portable electronic appliance to which the present invention is applied is not limited only to a cellular phone, and may be a PHS (Personal Handyphone system), a PDA, etc. so long as the portable electronic appliance has a twin camera configuration.

Fig. 1 is an external view of a cellular phone having a twin camera configuration according to the

preferred embodiment.

Fig. 1A shows the cellular phone 1 when viewed from the front side (hereinafter referred to as a user shooting side) on which a display unit 13 exists, whereas
5 Fig. 1B shows the cellular phone 1 when viewed from its back side (hereinafter referred to as an opposite shooting side).

In these figures, the cellular phone 1 comprises two camera units 11a and 11b, mobile lights 12a and 12b
10 which are provided respectively for the camera units 11, a display unit 13, a button inputting unit 14, a transmission/reception antenna 15 for wirelessly transmitting voice data, shot image data, etc., and a
15 mike and a speaker, which are not shown and intended to capture voice data of a user, and to output received voice data.

Among these constituent elements, the camera unit 11a is a camera (hereinafter referred to as a user shooting side camera) for shooting, which is provided
20 on the same user shooting side as that of the display unit 13, the mobile light 12a is a light source which illuminates a shooting target for the camera unit 11a. The camera unit 11a and the mobile light 12a are used to shoot a user side of the cellular phone 1. On the
25 other hand, the camera unit 11b is a camera for shooting

(hereinafter referred to as an opposite shooting side camera), which is provided on the opposite shooting side on the back of the camera unit 11a, and the mobile light 12b is a light source which illuminates a shooting target
5 for the camera unit 11b. The camera unit 11b and the mobile light 12b are used to shoot a shooting target on the side opposite to the user of the cellular phone 1. Additionally, when shooting is made with the camera unit 11a or 11b, an image shot with the activated camera
10 unit 11a or 11b is displayed on the display unit 13, and a user takes a shot while viewing the displayed image.

On the button inputting unit 14, a camera button, a submenu button, a confirmation button, a light button,
15 a shutter button, a storage button, an end button, an UP button, and a DOWN button are provided as input buttons for taking a shot with the camera units 11a and 11b in addition to input buttons provided for a telephone capability of the cellular phone, such as buttons for
20 inputting a telephone number from 1 to 9, 0, etc. The above described buttons may be configured respectively as one button of the button inputting unit 14, or one button may serve as a plurality of capabilities.

A user takes shooting by selecting and using the
25 two camera units 11a and 11b depending on purpose with

an operation of these input buttons. This point will be described later.

Fig. 2 is a block diagram showing the internal configuration of the cellular phone 1. This figure shows a rough configuration of only a portion which governs the shooting process executed by the camera units 11a and 11b, but does not show portions related to the other capabilities, such as a configuration for implementing the telephone capability, etc.

10 In this figure, the cellular phone 1 includes an application CPU 21, camera units 22a and 22b, mobile lights 23a and 23b, DSPs 24a and 24b, a display unit 25, a ROM 26, a flash memory 27, a RAM 28, and a communication BB 29.

15 Among these constituent elements, the camera units 22a and 22b, the mobile lights 23a and 23b, and the display unit 25 respectively correspond to the camera units 11a and 11b, the mobile lights 12a and 12b, and the display unit 13, which are shown in Fig. 1.

20 The camera units 22a and 22b are cameras for shooting. The camera unit 22a is used when a user takes a shot by orientating the camera unit 22a toward the user. In the meantime, the camera unit 22b is used when a user takes a shot by orientating the camera unit 22b to a direction other than the user while viewing the

25

display unit 13. Therefore, since assumed use situations and shooting targets of these camera units 22a and 22b differ, their settings for focal length, view angle, etc. vary. For example, the camera unit 22a is intended
5 to make a user shoot only the user himself or several people including the user. Accordingly, its focal length is set to several tens of centimeters so as to achieve focus, its view angle is made larger, and the number of lenses is increased to prevent a distortion on the
10 periphery of an image. Inversely, the camera unit 22b is intended to be used to shoot a subject several meters away or a scenic view. Therefore, its focal length is set to be larger than that of the camera unit 22a, and its view angle is set to be smaller in contrast.

15 Images shot by the camera units 22a and 22b are converted into digital image data respectively by the DSPs 24a and 24b, and output to the application CPU 21. The DSPs 24a and 24b are digital signal processors for image processing. After executing various types of image
20 processing such as a contrast adjustment, etc. for the images shot by the camera units 22a and 22b, the DSPs 24a and 24b compress the image data, and output the compressed image data to the application CPU 21.

The application CPU 21 is intended to control the
25 processes of the entire cellular phone based on a program

and data within the ROM 26. In accordance with an instruction input from a user via the button inputting unit 14, the application CPU 21 executes the processes such as switching (to be described later) between the camera units 22a and 22b, activation and deactivation, switching between the mobile lights 23a and 23b in synchronization with the switching between the camera units 22, switching between light emitting ways, and the like, stores image data from the DSPs 24a and 24b in the flash memory 27, transmits the image data to a communications network with the communication BB 29.

The mobile lights 23a and 23b are illuminants configured by a high luminance LED, or the like, and serve as a flashlight which illuminates a subject when a light level is insufficient. Additionally, the mobile lights may be configured in a way such that a favorite color can be selected from among a plurality of color lightings at the time of shooting, and a filter effect can be added to an image.

The mobile light 23a is used when shooting is made with the camera unit 22a, whereas the mobile light 23b is used when shooting is made with the camera unit 22b. Accordingly, as the mobile lights 23a and 23b, mobile lights having configurations suitable for corresponding camera units 22 are respectively used.

For example, the camera unit 22a is assumed to be used for shooting at close range. Therefore, the mobile light 23a with a light level lower than that of the mobile light 23b is used. Switching is also made between the mobile lights 23a and 23b the same time switching is made between the camera units 22a and 22b that take a shot.

The display unit 25 is configured by an LCD, etc. Images shot by the camera units 22, a selection menu, various information items are displayed on the display unit 25. The ROM 26 is intended to store a program executed by the application CPU 21. The RAM 28 serves as a working memory of the application CPU 21. The communication BB 29 is a wireless device which makes a wireless communication, and exchanges data with a communication terminal of another cellular phone 1, etc. via a base station.

The mobile lights 23a and 23b have a synchronous light emission mode where light is emitted in synchronization with the shutter of the camera units 22a and 22b, and a continuous light emission mode where a subject is illuminated by lighting the light from a time point prior to a time point when the shutter is released, as light emitting ways. A user can switch between these modes depending on a shooting situation,

a shooting target, how to use the camera units 22.

An operation example of the cellular phone 1 when shooting is made with the opposite shooting side camera (camera unit 11b) is described next.

5 The camera unit 11b is assumed to be used similar to a general camera with which a user shoots a subject several meters away or a scenic view while viewing an image displayed on the display unit 13.

Fig. 3 is a flowchart showing a first operation
10 process example of the cellular phone 1 when shooting is made with the opposite shooting side camera (camera unit 11b).

When a user desires to take a shot with the cellular phone 1, and presses the camera button of the
15 button inputting unit 14 (step S1), the cellular phone 1 activates the camera unit 11b which starts up by default among the two camera units, and makes the display unit 13 display an active image (through image) viewed on the camera unit 11b.

20 Next, when the user presses the submenu button of the button inputting unit 14 and performs an operation (step S2), the cellular phone 1 makes the display unit 13 display a menu 31a for selecting the light emission mode of the mobile lights 12. When the user selects
25 either the continuous light emission mode or the

synchronous light emission mode by operating the UP/DOWN button of the button inputting unit 14, and presses the confirmation button (step S3), the cellular phone 1 makes operation settings for the selected light emission mode.

5 The example shown in this figure assumes that the user selects the continuous light emission mode.

Next, when the user presses the light button (step S4), the cellular phone 1 lights the mobile light 12b because the continuous light emission mode is selected.

10 In this state, assume that the user moves the position or the orientation of the cellular phone 1 while viewing the through image displayed on the display unit 13, and presses the shutter button of the button inputting unit 14 when an image that the user desires to shoot is displayed on the display unit 13 (step S5).
15 In response to the press of the shutter button, the cellular phone 1 takes a shot with the camera unit 11b, deactivates the camera unit 11b thereafter, and puts out the mobile light 12b. Additionally, the cellular
20 phone 1 makes the display part 13 display the image shot at this time as a still image.

When the user presses the storage button so as to store this shot image (step S6), the cellular phone 1 records the data of the shot image in the flash memory
25 27, activates the camera unit 11b in order to enable

the next shooting, makes the display unit 13 display a through image, and lights the mobile light 12b.

In this state, when the user presses the end button of the button inputting unit 14 so as to stop the shooting
5 (step S7), the cellular phone 1 deactivates the camera unit 11b, and puts out the mobile light 12b.

Fig. 4 is a flowchart showing a second operation process example of the cellular phone 1 when shooting is made with the opposite shooting side camera (camera
10 unit 11b). This figure shows an operation example of the cellular phone 1 when the synchronous light emission mode is selected as a way of lighting the mobile lights 12.

In this figure, when a user desires to take a shot
15 with the cellular phone 1, and presses the camera button of the button inputting unit 14 (step S11), the cellular phone 1 activates the default camera unit 11b among the two camera units, and makes the display unit 13 display a through image viewed on the camera unit 11b.

20 Next, when the user presses the submenu button of the button inputting unit 14 and performs an operation (step S12), the cellular phone 1 makes the display unit 13 display a menu 31b for selecting the light emission mode of the mobile lights 12. When the user selects
25 either the continuous light emission mode or the

synchronous light emission mode by operating the UP/DOWN button of the button inputting unit 14, and presses the confirmation button (step S13), the cellular phone 1 makes operation settings for the selected light emission mode. This example assumes that the user selects the synchronous light emission mode.

In this state, assume that the user moves the position or the orientation of the cellular phone 1 while viewing the through image displayed on the display unit 13, and presses the shutter button of the button inputting unit 14 when an image that the user desires to shoot is displayed on the display unit 13 (step S14). In synchronization with the press of the shutter button, the cellular phone 1 makes the mobile light 12b emit light for an instant to illuminate a subject, and takes a shot with the camera unit 11b, and deactivates the camera unit 11b thereafter. Additionally, the cellular phone 1 makes the display unit 13 display the image shot at this time as a still image.

When the user presses the storage button so as to store this shot image (step S15), the cellular phone 1 records the data of the shot image in the flash memory 27, activates the camera unit 11b for the next shooting, and makes the display unit 13 display a through image.

In this state, when the user presses the end button

of the button inputting unit 14 so as to stop the shooting (step S16), the cellular phone 1 deactivates the camera unit 11b.

An operation example of the cellular phone 1 when shooting is made with the user shooting side camera (camera unit 11a) is described next.

The camera unit 11a is provided on the same side as the display unit 13, and is mainly used by a user to shoot an image including the user himself. Accordingly, the distance between the camera unit 11a and the user is assumed to be on the order of 50 to 60 centimeters at the maximum, in which the user reaches out his hand to take a shot. Additionally, if switching of the activated camera unit 11 is made from the camera unit 11b to the camera unit 11a when shooting is made, switching of the mobile light 12 is also made from the mobile light 12b to the mobile light 12a in synchronization. Since the mobile light 12a assumes that a subject is apart on the order of 50 to 60 centimeters at the maximum, it has a light level suitable for illuminating a subject in a distance on the above described order.

Fig. 5 is a flowchart showing a first operation process example of the cellular phone 1 when shooting is made with the camera unit 11a.

When a user presses the camera button of the button inputting unit 14 so as to take a shot with the cellular phone 1 (step S21), the cellular phone 1 activates the default camera unit 11b, and makes the display unit 13
5 display a through image viewed on the camera unit 11b.

Next, when the user presses the submenu button and performs an operation (step S22), the cellular phone 1 makes the display unit 13 display a menu 31c for selecting the light emission mode of the mobile lights
10 12. When the user selects either the continuous light emission mode or the synchronous light emission mode on the screen of the display unit 13 by operating the UP/DOWN button of the button inputting unit 14, and presses the conformation button (step S23), the cellular
15 phone 1 sets operation settings for the selected light emission mode. The example shown in this figure assumes that the user selects the continuous light emission mode.

Next, when the user presses the light button (step
20 S24), the cellular phone 1 lights the mobile light 12b since the continuous light emission mode is selected.

Because the user desires to take a shot on the user shooting side with the camera unit 11a, the user presses the camera switching button of the button inputting unit
25 14 (step S25). As a result, the cellular phone 1

deactivates the camera unit 11b, and activates the camera unit 11a instead. Additionally, the cellular phone 1 makes the display unit 13 display a through image viewed on the camera unit 11a. In response to the press
5 of the camera switching button, the cellular phone 1 puts out the mobile light 12b, and lights the mobile light 12a instead in synchronization with the switching between the camera units 11.

In this state, assume that the user moves the
10 position or the orientation of the cellular phone 1 while viewing the through image displayed on the display unit 13, and presses the shutter button of the button inputting unit 14 when an image that the user desires to shoot is displayed on the display unit 13 (step S26).
15 In response to the press of the shutter button, the cellular phone 1 takes a shot with the camera unit 11a, deactivates the camera unit 11a thereafter, and puts out the mobile light 12a. Additionally, the cellular phone 1 makes the display unit 13 display the image shot
20 at this time as a still image.

When the user presses the storage button so as to store this shot image (step S27), the cellular phone 1 records the data of the shot image in the flash memory 27, activates the camera unit 11a for the next shooting,
25 makes the display unit 13 display a through image, and

lights the mobile light 12a.

In this state, when the user presses the end button of the button inputting unit 14 so as to stop the shooting (step S28), the cellular phone 1 deactivates the camera unit 11a, and puts out the mobile light 12a.

Fig. 6 is a flowchart showing a second operation process example of the cellular phone 1 when shooting is made with the camera unit 11a on the user shooting side. The second operation process example shows an operation example of the cellular phone 1 when the synchronous light emission mode is selected as a way of lighting the mobile light 12b.

When a user presses the camera button of the button inputting unit 14 so as to take a shot with the cellular phone 1 (step S31), the cellular phone 1 activates the default camera unit 11b, and makes the display unit 13 display a through image viewed on the camera unit 11b.

When the user presses the submenu button (step S32), the cellular phone 1 makes the display unit 13 display a menu 31d for selecting the light emission mode of the mobile lights 12. When the user presses the confirmation button after selecting either the continuous light emission mode or the synchronous light emission mode in the menu 31d by operating the UP/DOWN button (step S33), the cellular phone 1 makes operation

settings for the selected light emission mode. In the example shown in this figure, the user selects the continuous light emission mode.

When the user presses the camera switching button
5 so as to take a shot with the camera unit 11a on the user shooting side (step S34), the cellular phone 1 deactivates the camera unit 11b, and activates the camera unit 11a. Additionally, the cellular phone 1 makes the display unit 13 display a through image viewed
10 on the camera unit 11a.

In this state, assume that the user moves the position or the orientation of the cellular phone 1 while viewing the through image displayed on the display unit 13, and presses the shutter button when an image that
15 the user desires to shoot is displayed on the display unit 13 (step S34). After the cellular phone 1 makes the mobile light 12a emit light for an instant, and takes a shot with the camera unit 11a in synchronization with the press of the shutter button, it deactivates the
20 camera unit 11a. Then, the cellular phone 1 makes the display unit 13 display the image shot at this time as a still image.

When the user presses the storage button so as to store this shot image (step S35), the cellular phone
25 1 records the data of the shot image in the flash memory

27, activates the camera unit 11a for the next shooting, and makes the display unit 13 display a through image.

In this state, when the user presses the end button of the button inputting unit 14 so as to stop the shooting
5 (step S36), the cellular phone 1 deactivates the camera unit 11a.

An operation example of the cellular phone 1 when shooting is made by switching to the camera unit 11a after shooting is made with the camera unit 11b is
10 described next.

Fig. 7 is a flowchart showing a first operation process example in such a case.

In this figure, when a user presses the camera button so as to take a shot with the cellular phone 1
15 (step S41), the cellular phone 1 activates the default camera unit 11b, and makes the display unit 13 display a through image viewed on the camera unit 11b.

Next, when the user presses the submenu button and performs an operation (step S42), the cellular phone
20 1 makes the display unit 13 display a menu 31e for selecting the light emission mode of the mobile lights 12. When the user selects either the continuous light emission mode or the synchronous light emission mode in the menu 31e by operating the UP/DOWN button, and
25 presses the confirmation button (step S43), the cellular

phone 1 makes operation settings for the selected light emission mode. The example shown in this figure assumes that the user selects the continuous light emission mode.

5 Next, when the user presses the light button (step S44), the cellular phone 1 lights the mobile light 12b since the continuous light emission mode is selected.

 In this state, assume that the user moves the position or the orientation of the cellular phone 1 while
10 , viewing the through image displayed on the display unit 13, and presses the shutter button when an image that the user desires to shoot is displayed on the display unit 13 (step S45). As a result, the cellular phone 1 takes a shot with the camera unit 11b, deactivates the
15 camera unit 11b thereafter, and puts out the mobile light 12b. Then, the cellular phone 1 makes the display unit 13 display the image shot at this time as a still image.

 When the user presses the storage button so as to store this shot image (step S46), the cellular phone
20 1 records the data of the shot image in the flash memory 27, activates the camera unit 11b for the next shooting, makes the display unit 13 display a through image, and lights the mobile light 12b.

 Assume that the user presses the camera switching
25 button next so as to use the camera unit 11a (step S47).

In response to the press of the camera switching button, the cellular phone 1 deactivates the camera unit 11b, and activates the camera unit 11a instead. Additionally, the cellular phone 1 puts out the mobile light 12b, and
5 lights the mobile light 12a instead in synchronization with the switching of the camera unit 11. Furthermore, the cellular phone 1 makes the display unit 13 display a through image viewed on the camera unit 11a.

In this state, assume that the user moves the
10 position or the orientation of the cellular phone 1 while viewing the through image displayed on the display unit 13, and presses the shutter button (step S48). As a result, the cellular phone 1 takes a shot with the camera unit 11a, deactivates the camera unit 11a thereafter,
15 and puts out the mobile light 12a. Additionally, the cellular phone 1 makes the display unit 13 display the image shot at this time as a still image.

When the user presses the storage button so as to store this shot image (step S49), the cellular phone
20 1 records the data of the shot image in the flash memory 27, activates the camera unit 11a, makes the display unit 13 display a through image, and lights the mobile light 12a.

In this state, when the user presses the end button
25 so as to stop the shooting (step S50), the cellular phone

1 deactivates the camera unit 11a, and puts out the mobile light 12a.

Fig. 8 is a flowchart showing a second operation process example when shooting is made with the camera unit 11a after shooting is made with the camera unit 11b. The operation process example shown in this figure depicts an operation example of the cellular phone 1 when the synchronous light emission mode is selected as a way of lighting the mobile lights 12.

10 In this figure, when a user presses the camera button so as to take a shot with the cellular phone 1 (step S61), the cellular phone 1 activates the default camera unit 11b, and makes the display unit 13 display a through image viewed on the camera unit 11b.

15 Next, when the user presses the submenu button, and performs an operation (step S62), the cellular phone 1 makes the display unit 13 display a menu 31f for selecting the light emission mode of the mobile lights 12. When the user selects either the continuous light emission mode or the synchronous light emission mode in the menu 31f by operating the UP/DOWN button, and presses the confirmation button (step S63), the cellular phone 1 makes operation settings for the selected light emission mode. This figure assumes that the user
20 selects the synchronous light emission mode.
25

In this state, assume that the user moves the position or the orientation of the cellular phone 1 while viewing the through image displayed on the display unit 13, and presses the shutter button when an image that the user desires to shoot is displayed on the display unit 13 (step S64). In synchronization with the press of the shutter button, the cellular phone 1 makes the mobile light 12b emit light for an instant to illuminate a subject, takes a shot with the camera unit 11b, and deactivates the camera unit 11b thereafter. Additionally, the cellular phone 1 makes the display unit 13 display the image shot at this time as a still image.

When the user presses the storage button so as to store this shot image (step S65), the cellular phone 1 records the data of the shot image in the flash memory 27, activates the camera unit 11b for the next shooting, and makes the display unit 13 display a through image.

Next, when the user presses the camera switching button so as to take a shot with the camera unit 11a on the user shooting side (step S66), the cellular phone 1 deactivates the camera unit 11b, and activates the camera unit 11a. Additionally, the cellular phone 1 makes the display unit 13 display a through image viewed on the camera unit 11a.

In this state, assume that the user moves the position or the orientation of the cellular phone 1 while viewing the through image displayed on the display unit 13, and presses the shutter button (step S67). In
5 synchronization with the press of the shutter button, the cellular phone 1 makes the mobile light 12a emit light for an instant to illuminate a subject, takes a shot with the camera unit 11a, and deactivates the camera unit 11a thereafter. Then, the cellular phone 1 makes
10 the display unit 13 display the image shot at this time as a still image.

When the user presses the storage button so as to store this shot image (step S68), the cellular phone 1 records the data of the shot image in the flash memory
15 27, activates the camera unit 11a, and makes the display unit 13 display a through image.

In this state, when the user presses the end button so as to stop the shooting (step S69), the cellular phone 1 deactivates the camera unit 11a.

20 An operation example of the cellular phone 1 when shooting is simultaneously made with the two camera units 11a and 11b is described next.

In this example, shooting is simultaneously made with the two camera units 11a and 11b of the cellular
25 phone 1. This cellular phone 1 enables the usage such

that a user is shot with the camera unit 11a, and a peripheral scenic view, etc. is simultaneously shot with the camera unit 11b. The two images shot at this time are used unchanged, or can be used to create an image
5 for which processing such as synthesis, etc. is performed.

Fig. 9 is a flowchart showing a first operation process example of the cellular phone 1 in such a case.

In this figure, when a user presses the camera
10 button so as to take a shot with the cellular phone 1 (step S71), the cellular phone 1 activates the default camera unit 11b, and makes the display unit 13 display a through image viewed on the camera unit 11b.

Next, when the user presses the submenu button and
15 performs an operation (step S72), the cellular phone 1 makes the display unit 13 display a menu 31g for selecting the light emission mode of the mobile lights 12. When the user selects either the continuous light emission mode or the synchronous light emission mode
20 in the menu 31g by operating the UP/DOWN button, and presses the confirmation button (step S73), the cellular phone 1 makes operation settings for the operation mode corresponding to the selected light emission mode. This figure assumes that the user selects the continuous
25 light emission mode.

Next, when the user presses the light button (step S74), the cellular phone 1 lights the mobile light 12b corresponding to the camera unit 11b since the continuous light emission mode is selected.

5 Next, when the user presses the submenu button of the button inputting unit 14 and performs an operation so as to take a shot with both of the camera units 11a and 11b, the cellular phone 1 makes the display unit 13 display a menu 32a for selecting the camera units
10 (step S75). Assume that the user presses the confirmation button after selecting "camera 11a & 11b" in the menu 32a by operating the UP/DOWN button (step S76). In this case, the cellular phone 1 activates both of the camera units 11a and 11b, makes the display unit
15 13 display through images viewed on the camera units 11a and 11b as a split view of the screen, and lights both of the mobile lights 12a and 12b.

In this state, when the user moves the position or the orientation of the cellular phone 1 while viewing
20 the through images displayed on the display unit 13, and presses the shutter button when images that the user desires to shoot are displayed on the display unit 13 (step S77), the cellular phone 1 takes a shot with both of the camera units 11a and 11b. After executing the
25 shooting process, the cellular phone 1 deactivates the

camera units 11a and 11b, and puts out the mobile lights 12a and 12b. Additionally, the cellular phone 1 makes the display unit 13 display the two images shot at this time as a split view of the screen as still images.

5 When the user presses the storage button so as to store these shot images (step S78), the cellular phone 1 records the data of the images shot with the two camera units 11a and 11b in the flash memory 27, activates the camera units 11a and 11b for the next shooting, makes
10 the display unit 13 display through images viewed on the two camera units 11, and lights the mobile lights 12a and 12b.

 In this state, when the user presses the end button so as to stop the shooting (step S79), the cellular phone
15 1 deactivates the camera units 11a and 11b, and puts out the mobile lights 12a and 12b.

 Fig. 10 is a flowchart showing a second operation process example of the cellular phone 1 when shooting is simultaneously made with the two camera units 11a
20 and 11b of the cellular phone 1. The operation process example shown in this figure depicts an operation example of the cellular phone 1 when the synchronous light emission mode is selected as the way of lighting the mobile light 12b.

25 In this figure, when a user presses the camera

button to take a shot with the cellular phone 1 (step S81), the cellular phone 1 activates the default camera unit 11b, and makes the display unit 13 display a through image viewed on the camera unit 11b.

5 Next, when the user presses the submenu button and performs an operation (step S82), the cellular phone 1 makes the display unit 13 display a menu 31h for selecting the light emission mode of the mobile lights 12. When the user selects either the continuous light
10 emission mode or the synchronous light emission mode in the menu 31h by operating the UP/DOWN button, and presses the confirmation button (step S83), the cellular phone 1 sets operation settings for the selected light emission mode. This figure assumes that the user
15 selects the synchronous light emission mode.

 Next, when the user presses the submenu button, and performs an operation so as to take a shot with both of the camera units 11a and 11b (step S84), the cellular phone 1 makes the display unit 13 display a menu 32b
20 for selecting the camera units. When the user presses the confirmation button after selecting "cameras 11a & 11b" by operating the UP/DOWN button (step S85), the cellular phone 1 activates both of the camera units 11a and 11b, and makes the display unit 13 display through
25 images viewed on the camera units 11a and 11b as a split

view of the screen.

In this state, when the user moves the position or the orientation of the cellular phone 1 while viewing the through images displayed on the display unit 13, and presses the shutter button when images that the user desires to shoot are displayed on the display unit 13 (step S86), the cellular phone 1 makes the mobile lights 12a and 12b emit light for an instant to illuminate subjects, and takes a shot with both of the camera units 11a and 11b in synchronization with the press of the shutter button. Thereafter, the cellular phone 1 deactivates the camera units 11a and 11b. Then, the cellular phone 1 makes the display unit 13 display the two images shot at this time as a split view of the screen as still images.

When the user presses the storage button so as to store these shot images (step S87), the cellular phone 1 records the data of the images shot with the two camera units 11a and 11b in the flash memory 27, activates the camera units 11a and 11b, and makes the display unit 13 display through images viewed on the two camera units 11.

In this state, when the user presses the end button so as to stop the shooting (step S88), the cellular phone 1 deactivates the camera units 11a and 11b.

As described above, with the cellular phone 1 according to this preferred embodiment, when shooting is made only with the camera unit 11a or 11b or with both of the camera units 11a and 11b, switching is automatically made between the mobile lights 12a and 12b in synchronization with the switching between the camera units 11.

According to the present invention, when switching is made between cameras that take a shot in an appliance having a twin camera configuration where two camera units are comprised, also switching can be automatically made between two light sources that govern a flash capability.

Additionally, a user of the appliance can change a way of emitting light of the light sources depending on usage.